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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,448	04/04/2006	Guofu Zhou	NL 031175	9649
24737 7590 03/24/2010 PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510				
EXAMINER				
LAM, VINH TANG				
ART UNIT		PAPER NUMBER		
2629				
MAIL DATE		DELIVERY MODE		
03/24/2010		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/574,448

Applicant(s)

ZHOU ET AL.

Examiner

VINH T. LAM

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 4-17 and 19-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-06)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the **first paragraph** of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding Claim 1, the specification as originally filed has failed to provide support for the recitation of "...providing during selection of a picture element variable voltages to said picture element prior to applying a fixed voltage to the display device associated with an electro-optical state of the picture element to be set, wherein the variable voltages are selected to comprise a set of alternating voltages having one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the fixed voltage that is associated with the electro-optical state of the picture element to be set, wherein the fixed voltage is a voltage that is not equal to zero volts...". The specification does not reasonably convey one skill in the art how to make or use applicant claimed invention for "...providing during selection of a picture element variable voltages to said picture element prior to applying a fixed voltage to the

display device associated with an electro-optical state of the picture element to be set, wherein the variable voltages are selected to comprise a set of alternating voltages having one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the fixed voltage that is associated with the electro-optical state of the picture element to be set, wherein the fixed voltage is a voltage that is not equal to zero volts...”.

The following is a quotation of the **second paragraph** of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation of Claim 1 “...providing during selection of a picture element variable voltages to said picture element prior to applying a fixed voltage to the display device associated with an electro-optical state of the picture element to be set, wherein the variable voltages are selected to comprise a set of alternating voltages having one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the fixed voltage that is associated with the electro-optical state of the picture element to be set, wherein the fixed voltage is a voltage that is not equal to zero volts...” is not clear.

Does the applicant mean that:

(a) "...one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the fixed voltage ..." which is **IDENTICALLY EQUAL** to a **fixed voltage** immediately following one of a mean voltage, a root mean square voltage and an average voltage? In other words, for example, a set of alternating voltages (i.e. 31 of FIG. 3) having one of a mean voltage, a root mean square voltage and an average voltage (i.e. the first four pre-pulse of 31 in FIG. 3) has a **value of V1** which is **IDENTICALLY EQUAL** to a **fixed voltage, V1**?

or

(b) "...one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to A FIRST fixed voltage ..." (e.g. **Vx**) which is **NOT EQUAL** to A SECOND fixed voltage is a voltage that is not equal to zero volts..." (i.e. **fixed voltage 32 (V1)** in FIG. 3)?

The above limitation (i.e. (a) interpretation) is not only rejected under 35 U.S.C. 112 2nd ¶ but also invoked 35 U.S.C. 112 1st ¶ since there is no disclosure of "...providing during selection of a picture element variable voltages to said picture element prior to applying a fixed voltage to the display device associated with an electro-optical state of the picture element to be set, wherein the variable voltages are selected to comprise a set of alternating voltages having one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the fixed voltage that is associated with the electro-optical state of the picture element to be set, wherein the fixed voltage is a voltage that is not equal to zero volts..." (i.e. there's no support in the Specification and Drawing for "variable voltages ... having one of a

mean voltage, a root mean square voltage and an average voltage ... substantially equal to the fixed voltage ... ") in the originally filed specification.

To further advance prosecution, the Examiner interprets and *assumes* as shown above in (b) which is supported by applicant's Specification and Drawing.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims **1-3** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Loxley et al. (US Patent No. 6262833)** in view of **Sato (US Patent No. US 4041481)** and further in view of **Sterling et al. (US Pub. No. 2004/0231987)**.

Regarding Claim **1**, (Currently amended) **Loxley et al.** teach a display device having at least one picture element having an optical switch comprising at least one first fluid (Col. 2, Ln. 54) and a second fluid (Col. 2, Ln. 54-55) immiscible with each other above a first support plate (Col. 2, Ln. 38-40, Ln. 50-54), display device has driving means for applying to electrodes of the optical switch voltages associated with a range of electro-optical states of the picture element (Col. 1, Ln. 58-62) between and

including a first extreme state and a second extreme state (Col. 1, Ln. 66-67, Col. 2, Ln. 1-4, FIG. 1).

However, **Loxley et al.** do not teach driving means providing variable voltages prior to applying a fixed voltage, wherein the variable voltages comprise alternating voltages.

In the same field of endeavor, **Sato** teaches that driving means providing during selection (FIGs. 7G-7I, i.e. T_{X1} - T_{X3}) of a picture element (FIG. 7G, i.e. C11) variable voltages (Col. 7, Ln. 19-21, FIG. 7G or FIG. 6B, i.e. *erase pulses* during T_E) to said picture element prior to applying a fixed voltage (Col. 7, Ln. 40-58, FIG. 7G, i.e. +V during T_s) to the display device associated with an electro-optical state (Col. 7, Ln. 40-58, FIG. 7G, i.e. +V during T_s would obviously produce an electro-optical state) of the picture element to be set (FIG. 7G, i.e. +V during T_s of C11),

wherein the variable voltages are selected to comprise a set of alternating voltages (Col. 7, Ln. 19-21, FIG. 7G or FIG. 6B, i.e. *erase pulses* during T_E) having one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the fixed voltage (i.e. obviously because *a mean voltage of erase pulses* during T_E of FIG. 7G would have been zero which is a *fixed* voltage level) that is associated with the electro-optical state of the picture element to be set (i.e. obviously an erasing state), wherein the fixed voltage (Col. 7, Ln. 19-21, FIG. 7G, i.e. +V during T_s of T_{X1}) is a voltage that is not equal to zero volts (i.e. +V during T_s of T_{X1} shown in FIG. 7G).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Loxley et al.** teaching of a display device having picture element having, driving means, and range of electro-optical states with **Sato** teaching of driving means providing variable voltages prior to applying a fixed voltage to the display device *to enhance the image quality by eliminating the cross effect of the display.*

Loxley et al. and **Sato** teach the above display device and driving means.

However, **Loxley et al.** and **Sato** do not teach that the second fluid being electro-conductive or polar.

In the same field of endeavor, **Sterling et al.** teach the second fluid being electro-conductive or polar ([0075], FIG. 16B, i.e. 118a).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Loxley et al.** and **Sato** teaching of a display device structures and the driving means having variable voltages with **Sterling et al.** teaching of the second fluid being electro-conductive or polar *to substantially reduce the cost, parts (i.e. polar particles), and simplifying the design and/or manufacturing process.*

Regarding Claim 2, (Previously presented) the display device according to claim 1 wherein **Loxley et al.** teach the fluids within a space between a first transparent support plate and a second support plate (Col. 5, Ln. 58-68, Col. 6, Ln. 1-12, FIG. 1).

Regarding Claim 3, (Currently amended) the display device according to claim 1 in which **Sato** teaches the variable voltages comprise a set of alternating voltages (Col. 7, Ln. 19-21, FIGs. 7G-7I, i.e. **erase pulses** during T_E) having a mean

value substantially equal to the fixed voltage (i.e. obviously because *a mean voltage of erase pulses* during T_E of FIG. 7G would have been zero which is a *fixed* voltage level) associated with an electro-optical state of the picture element to be set (FIG. 7G, i.e. $+V$ during T_s of C11).

Regarding Claim 18, (Previously presented) the display device according to claim 1 wherein **Loxley et al.** teach the variable voltage includes one of the first and second extreme states (Col. 5, Ln. 44-68, Col. 6, Ln. 1-12, FIGs. 1 & 2).

Response to Arguments/Amendments/Remarks

4. Applicant's arguments, see Page(s) 7-10 filed 12/29/2009, with respect to 35 U.S.C. §112 2ND ¶ have been fully considered and are persuasive. The Rejection under 35 U.S.C. §112 2ND ¶ has been withdrawn.
5. Applicant's arguments, see Page(s) 10-11 filed 12/29/2009, with respect to Obvious Double Patenting have been fully considered and are persuasive. The Rejection of Obvious Double Patenting has been withdrawn.
6. Applicant's arguments, see Page(s) 12-15 filed 12/29/2009, with respect to 35 U.S.C. §103(a) have been fully considered and are not persuasive.

Applicant argues that **Sato** fails to teach "*...the variable voltages are selected to comprise a set of alternating voltages having one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the fixed voltage that is associated with the electro-optical state of the picture element to be set, wherein the*

fixed voltage is a voltage that is not equal to zero volts...". However, the Examiner respectfully disagrees because of the following reasons:

i. First of all, there is no support in applicant's Specification and Drawing disclosing that what feature or/and structure (of the *method claim with a means plus function*) would provide "... one of a mean voltage, a root mean square voltage and an average voltage".

ii. Secondly in contrast, **Sato** apparatus undisputedly and undoubtedly teaches the **erase pulses** during T_E which would have produced "... one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the fixed voltage... not equal to zero volts". That is, there is no range specifically defined substantially not equal to zero.

iii. Finally and most important, **Sato** apparatus undisputedly and undoubtedly teaches "...the variable voltages are selected to comprise a set of alternating voltages having one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the fixed voltage that is associated with the electro-optical state of the picture element to be set, wherein the fixed voltage is a voltage that is not equal to zero volts..." because the **erase pulses** during T_E are not necessarily as shown in FIGs. 7G-7I, the **erase pulses** during T_E would also be as one shown in **FIG. 6B** which is **definitely a fixed voltage not equal to zero volts**.

7. Claims **21** and **22** are withdrawn because they are drawn to Non-Elected Species 3 (Fig. 5) and Species 4 (Fig. 6) respectively, filed 08/20/2008.

8. Claims **4-6** and **8-14** are withdrawn.

9. Claims **7** and **15-20** are canceled.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571)270-3704. The examiner can normally be reached on M-F (7:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone

Art Unit: 2629

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vinh T Lam/
Examiner, Art Unit 2629

/Amare Mengistu/
Supervisory Patent Examiner, Art Unit 2629